SHORELINE STABILIZATION

Shorelines within the APES are dynamic features that are receding significantly along most of the estuarine coast. Managing this coastal land loss is becoming ever more critical as coastal populations increase. The North Carolina Division of Coastal Management recognizes the importance of shoreline erosion management and recently established a working group charged with developing recommendations to guide the development of new estuarine shoreline stabilization rules. This Estuarine Biological and Physical Processes Working Group is providing guidance on the most appropriate stabilization method (Table 3) for different shoreline types. The number one recommendation for all estuarine shoreline types was land planning (i.e., leave the shorezone in its natural state). However, today this recommendation is not followed by most property owners along the trunk of the Neuse River Estuary. Recent mapping has shown that approximately 30% of the shoreline along the trunk of the Neuse River Estuary has been modified in an attempt to slow shoreline recession (Figure 6).

The desire to protect ones property is natural and logical; however, hardening of the shoreline has major consequences and should only be undertaken when essential. First, it must be understood that not all shorelines are at serious risk to significant erosion, as can be seen in Figure 5 (trunk vs. tributaries). Second, mitigation measures against shoreline erosion can have significant negative impacts on the immediate and adjacent coastal environments (e.g., neighbors and local fishing areas). Third, installation of hardened structures should really be undertaken as a last resort and not as an unnecessary preventative measure or for homeowner convenience.

If mitigation is needed, property owners should consult the web site of the Division of Coastal Management (DCM) and communicate with them to ensure that the recommended guidelines and laws are followed: http://dcm2.enr.state.nc.us/Hazards/estuarine.htm.

The following document can be used to understand what structures are recommended for different settings: http://dcm2.enr.state.nc.us/Hazards/EWG%20Final%20Report%20082106.pdf

Examples of various shoreline stabilization methods are presented here: http://dcm2.enr.state.nc.us/Hazards/estuarine_stabilization%20options.htm

Table 3. Shoreline stabilization methods outlined in August 2006 by the North Carolina Estuarine Biological and Physical Processes Working Group (http://dcm2.enr.state.nc.us/Hazards/EWG%20Final%20Report%20082106.pdf).

STRUCTURE TYPE	ALIASES	EROSION CONTROL PURPOSE
Land planning		Leaves the shorezone in its natural state.
Vegetation control	Wetland or upland plantings	Creates a buffer to dissipate energy.
Beach fill	Beach nourishment	Acts as a sacrificial erosive barrier.
Sills	Marsh sill, wooden breakwater, wave board	Reduce wave energy on the shoreline. Trap sediment landward to rebuild/ protect wetlands.
Groins	Jetties	Trap sand on the updrift side to build out the upland.
Breakwaters	Wave attenuator	Reduce wave energy on the shoreline. Trap sediment between the shore and breakwater.
Sloped structures	Riprap, revetment, sloped seawall	Protect land from erosion and absorb wave energy without reflecting waves.
Vertical structures	Bulkhead, seawall, gravity wall	Hold back the land.